

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PIROUZ MAGHSOUDNIA

Appeal No. 1996-3909
Application No. 08/115,440

ON BRIEF

Before GARRIS, LIEBERMAN, and KRATZ, Administrative Patent Judges.

KRATZ, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 4, 9 and 12-16, which are all of the claims pending in this application.

BACKGROUND

Appellant's invention relates to a process for treating wafers having a thin film resistor deposited thereon. According to appellant, the sheet resistance of the resistor is increased and the temperature coefficient of resistance is

reduced by utilizing a specified annealing process involving:

(1) heating

the wafer to an annealing temperature above the decomposition temperature of the thin film resistor, the increased annealing temperature of the wafer being reached in about 5-10 seconds;

(2) carrying out the annealing step at the rapidly bumped up annealing temperature for a time period of about 50-85

seconds; and (3) radiantly cooling the annealed wafer. An understanding of the invention can be derived from a reading of exemplary claim 13, which is reproduced below.

13. A process for increasing the sheet resistance and lowering the temperature coefficient of resistance of a thin film resistor deposited on a wafer, the process comprising:

(a) ramping the temperature of the wafer to an annealing temperature which is above the decomposition temperature of the thin film resistor by using a radiant heat source such that the wafer reaches the annealing temperature within a ramp up time of from about 5 to 10 seconds;

(b) annealing the wafer at the annealing temperature for an annealing period of from about 50 to 85 seconds; and

(c) cooling the annealed wafer by radiant cooling.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Paulson et al. (Paulson) 4,510,178
Apr. 09, 1985

Vugts 4,520,342 May 28,
1985

Chu et al. (Chu) 1987	4,682,143	Jul. 21,
Sparks 1988	4,732,874	Mar. 22,

Claims 4 and 12-16 stand rejected under 35 U.S.C. § 103 as being unpatentable over Paulson in view of Chu et al. and Sparks.

Claim 9 stands rejected under 35 U.S.C. § 103 as being unpatentable over Paulson in view of Chu et al., Sparks and Vugts.

OPINION

We have carefully reviewed the respective positions presented by appellant and the examiner. In so doing, we find ourselves in agreement with appellant's viewpoint that the examiner has not established a prima facie case of obviousness of the claimed subject matter. Accordingly, we will not sustain the examiner's rejections for essentially those reasons advanced by appellant, and we add the following primarily for emphasis.

The examiner (final rejection and examiner's answer), primarily relies on the teachings of Sparks regarding rapid thermal annealing in combination with Paulson in an attempt at

meeting the specified ramping, annealing and cooling steps that are common to all of the claims on appeal¹. According to the examiner, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the process of Paulson by using "a rapid thermal anneal process as taught by Sparks because it is desired to dissolve the metal precipitates and keep the precipitates in solution by rapid thermal annealing" (final rejection, page 8).

Besides the difficulty we have with the examiner's position regarding the obviousness of using the rapid thermal annealing process steps of Sparks in Paulson especially in the face of the contentions of appellant regarding the lack of motivation established by the examiner for such a substitution (brief, pages 10-14)², there is another significant hurdle that has not been cleared by the examiner. In particular, we note that even if the proposed modification of Paulson's

¹ The other applied references have not been specifically relied upon by the examiner to teach or suggest those method steps.

² We note, for example, that appellant has asserted that the "problems addressed by Sparks '874 do not exist in thin film resistors" (brief, page 14). The examiner has not adequately rebutted this contention of appellant at pages 8 and 9 of the answer.

process were made, the examiner has not convincingly established that a process step of radiant cooling corresponding to appellant's claimed process step would result.

It is manifest that the examiner must show that it would have been obvious to combine the teachings of the applied references so as to meet all of the limitations of the claimed invention in order to establish the prima facie obviousness of the claimed subject matter. As developed in appellant's brief (see, e.g., pages 11 and 14) however, the examiner has not pointed out where any of the applied references teach or suggest, alone or in combination, appellant's radiant cooling step. While the examiner asserts that the cooling step of Sparks "would be equivalent to a radiant cooling step" (answer, page 9), the examiner has not adequately explained how this contention is supported by the proffered teachings of Sparks. We observe that appellant (brief, page 11) particularly notes the failure of Sparks to teach radiant cooling.

On this record, it is our view that the examiner has failed to provide convincing reasons based on the applied prior art, or on the basis of knowledge generally available to one of ordinary skill in the art, as to why the teachings of the references should be combined in a manner so as to arrive at the claimed invention. We note that the mere fact that the prior art could be modified as proposed by the examiner is not sufficient to establish a prima facie case. See In re Fritsch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992). The rejection fails for lack of a sufficient factual basis being pointed out upon which to reach a conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

Accordingly, we agree with appellant that the examiner's stated rejections fall short of establishing a prima facie case of obviousness.

CONCLUSION

To summarize, the decision of the examiner to reject claims 4 and 12-16 under 35 U.S.C. § 103 as being unpatentable over Paulson in view of Chu et al. and Sparks and

to reject claim 9 under 35 U.S.C. § 103 as being unpatentable
over Paulson in view of Chu et al., Sparks and Vugts is
reversed.

REVERSED

BRADLEY R. GARRIS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
PAUL LIEBERMAN)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
)	
PETER F. KRATZ)	
Administrative Patent Judge)	

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